Developmental Pearls

Timing: 4 minutes preparation outside the station then **6+3 minutes** for development history then **1 min** presentation then **6 minutes** assessment then **3 minutes** presentation and **3 minutes** discussion.

- **Developmental History:** 2
  - Example For Presentation: 4
- **Assessment:** 5
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Psychiatric disorders: 22

- AUTISM 22
- ADHD 24

• Developmental History:

❄ ***Present History:***

- Onset, course, duration of the complaint. What did you do for that?
- Did he lose any other skills like …. or …. any behavioural changes recently.
- Can you describe for me his daily routine:

- If rigid routine and your task is cognitive assessment ask another 2 questions at least about **Autism**: **How he could express his needs? If his favourite toy taken, does he go in tantrum? Any abnormal reaction to touch, smell or noise? Any sleep disturbance? Any self-harm?**

- If suspecting **ADHD:** **Is he facing difficulties in making friends? Does he do careless mistakes? Feel fidgety? Can't stay still for a while? Driven by motor?**

- Any concern regarding his vision or hearing? Any skin changes?
- Any chronic illness or long-term medical condition?
- Any unusual facial features? Looks different from other family members?

Causes of delay:

· ***Head*** size and shape, **Brain Tumour, Brain Trauma**, **Brain infection**, **Fits** **(When 1st diagnosed? Any medicines given? Drug level done recently? Drugs side effects? When was the last fit? Wearing Bracelet? Emergency Plan? Home modification?** and **Shunt** **(Why? When? Problem with shunt? Care of shunt?)**

· ***Prenatal:*** Maternal age when got pregnant; Maternal disease, infection or medications during pregnancy; alcohol or illegal drugs.

· ***Natal:*** type & time of labour, birth weight, did he cry immediately?

· ***Postnatal:*** Needed resuscitation? Admitted to baby unit? Attached to breathing machine? For how long? Any fever? Any Fits? Any unusual yellowish discoloration? Tests? Imaging? Medicines given? **Any unusual findings in the Newborn Blood Spot (Heel Prick) Test?[1] Hearing and Vision Screening?[2]** and **Hip Examination (for DDH)[3]**.

· ***Systemic hx:*** **(headlines with no details)** according to the case; for example: **Rett $ ask about heart racing and nutrition, Down $ ask about heart & thyroid.**

· ***If the task is cognitive:*** Recurrent ear infection, Thyroid and **How many languages spoken at home and at school?**

❄ ***Other domains:*** 2 to 3 Q in each one.

→***Gross motor:*** Walking & Stairs or Running.

→***Fine motor:*** Cubes and Cryon drawing.

→***Speech:*** Name, Age, Sex and Orders.

→***Social:*** Feeding & Playing.

❄ ***Past history:*** details of ***Chronic Illness*** if present, ***Team*** he is following with and why, ***Treatment*** he is receiving, any ***Admission*** in detail, any ***Operation(s)*** done for him, any ***Travel*** recently.

❄ ***Family history:***

- ***Family Dynamics*** (Describe your family), ***Consanguinity*** (you and your husband are relatives), ***Similar Condition*** in your family, ***Any Family Member with Developmental Delay***, ***Any Chronic Illness in The Family.***
- ***Other Kids:*** are they healthy? have any developmental issues? How are they dealing with …? Who takes care of them if you are admitted to hospital with …?
- **If the task is motor: Previous Abortion – Foetal Death - Sudden Death in The Family.**

❄ ***Social history:***

→Are you and your husband working? Your Income is satisfactory for you?
→Do you have Health Insurance?
→Did you receive any Support?
→Do you have Easy Access to The Hospital?
→Do you have any Emergency Plan or Easy Access Card for him?

❄ ***Vaccination:*** esp. if case of regression, you can ask about MMR. ***(No relation between autism and MMR)***

❄ ***Allergy history:*** according to the case.

❄ ***Nutrition:*** If your case is Rickets, Rett, CP or side effect of medication like weight loss with sodium valproate or if mentioned that the child is small for age.

❄ ***Home:*** your home is old or new (in case of regression), Sun Exposure (for Rickets), Home Modifications done according to his condition.

❄ ***School:***

→Is ... Going to school or nursery?
→Type: Is it mainstream or special (needs) school?
→What about performance and attendance. Any bullying issues.
→If not going to school: anyone talked with you regarding ***EHCP*** (educational health care plan) for him.

❄ ***Impact:*** how the condition of … affect you and your family and how it affects ...

Example For Presentation:

◎ Today I took history from Miss... mother of ...she has a concern that he has problem in his walking in the form of abnormal gait esp. Rt. Side; started 1 month ago with acute onset and stationery course with affection also for his Rt UL, for which she went to his GP who did for him brain imaging which revealed a haemorrhage in his brain for which he followed with the neurologist and physiotherapist.

◎ … is known case of sickle cell anaemia diagnosed by newborn screening test; since that time, he is following with the haematologist.

◎ His father and mother are relatives, they have similar condition in the family, have financial issues with no easy access to hospital.

◎ He is going to a mainstream school with some bullying issues and his condition affects his attendance and performance as well. His condition affects him and his family psychologically.

◎ Regarding the age of other domains his chronological age is … and I give the age of ...y in … as he can only do … and... but can't do…

•Assessment:

- Take permission to play with.... from miss...
- After entering the room: **I will have a look on …**
- What he is doing right now?
- If playing with toy: is he obsessed with certain part of the toy?
- Did he notice my entry?
- Does he give me good eye contact?

❄ *General observation:*

- Is he average for his age regarding weight, height and head circumference?
- Does he have any unusual facial/skeletal features?
- Is he vitally stable? Any distress?
- Any attached device/intervention like: Hearing Aids, Eyeglasses? NG Tube? Hyoscine Patch? Shunt?
- In the surrounding, any wheelchair or supporting aids?
- Any abnormal posture, fisting or abnormal movements?

Ask about any structural abnormality before assessment of the function

◎ *If Gross Motor:*

- Any Deformities, any Contractures, Muscle Wasting.
- Bowing of Legs, Broadening of the Wrists.
- Hypertrophy of Calf Muscles (according to findings from your Hx).

◎ *If Fine Motor:*

- Any abnormalities or fisting position in the hand.
- Any eye abnormalities (ptosis, squint, telangiectasia).

◎ *If speech:*

- Any Ear Deformities.
- Any Tongue Tie or Mouth Deformities.
- Any Facial Deviation.

◎ *If social:*

- Observation for Psychiatric Problems (will be discussed later).

Developmental Ages:

Less Than 1-Year Milestones Assessment:

Fine motor & vision:

- Fix & Follow: 6 w
- Palmar Grasp & Mouthing: 4m
- Transfer Objects from Hand to Hand: 6m
- Follow Fallen Toys: 5-8m
- Pincer Grip: 10 m
- Banging Cubes: 9-12m
- Throwing= Casting Cubes: 12 -15m

Gross motor:

- Turn Head to One Side & Partial Head Support: 6w
- Head Support: 3m
- Sit With Support & Roll in Bed from Front to Back: 6m
- Sit Without Support: 8m
- Crawl & Pull to Stand: 9m
- Sit from Lying Position, Stand Alone, Cruise Around Furniture & Walk Alone: 12m

Social:

- Smile & Laugh: 6w
- Social Smile: 3m
- Awareness Of Strangers:6-9m
- 3P In Play (Bye-Bye, Peek A Poo, Pat A Cake), Clapping Hands: 9-12m

Speech & Hearing:

- Startle With Noise:6w
- Turn Head to Sound & Respond to Noise/Babbling/Cooing: 3-6m
- Say Mama & Dada Without Meaning: 9m
- Respond To His Name & Say Mama and Dada with Meaning: 12 m

Primitive Reflexes:

Primitive Reflex

Primitive Reflex		Maneuver	Ages
Palmar Grasp Reflex		Place your fingers into the baby's hands and press against the palmar surfaces. The baby will flex all fingers to grasp your fingers.	Birth to 3–4 months
Plantar Grasp Reflex		Touch the sole at the base of the toes. The toes curl.	Birth to 6–8 months
Rooting Reflex		Stroke the perioral skin at the corners of the mouth. The mouth will open and baby will turn the head toward the stimulated side and suck.	Birth to 3–4 months
Moro Reflex (Startle Reflex)		Hold the baby supine, supporting the head, back, and legs. Abruptly lower the entire body about 2 feet. The arms abduct and extend, hands open, and legs flex. Baby may cry.	Birth to 4 months
Asymmetric Tonic Neck Reflex		With baby supine, turn head to one side, holding jaw over shoulder. The arms/legs on side to which head is turned extend while the opposite arm/leg flex. Repeat on other side.	Birth to 2 months

Source : Bates' Guide to Physical Examination and History Taking, 11E 2012

Primitive Reflex (*continued*)

Primitive Reflex		Maneuver	Ages
Trunk Incurvation (Galant's) Reflex		Support the baby prone with one hand, and stroke one side of the back 1 cm from midline, from shoulder to buttocks. The spine will curve toward the stimulated side.	Birth to 2 months
Landau Reflex		Suspend the baby prone with one hand. The head will lift up, and the spine will straighten.	Birth to 6 months
Parachute Reflex		Suspend the baby prone and slowly lower the head toward a surface. The arms and legs will extend in a protective fashion.	8 months and does not disappear
Positive Support Reflex		Hold the baby around the trunk and lower until the feet touch a flat surface. The hips, knees, and ankles extend, the baby stands up, partially bearing weight, sags after 20–30 seconds.	Birth or 2 months until 6 months
Placing and Stepping Reflexes		Hold baby upright as in positive support reflex. Have one sole touch the tabletop. The hip and knee of that foot will flex and the other foot will step forward. Alternate stepping will occur.	Birth (best after 4 days). Variable age to disappear

More Than 1-Year Milestones Assessment:

- **Gross motor:** مشي وقوف جري وتنطيط كورة سلم عجلة

Ask first if the child can walk, ask about any special gait, simple observation for muscle wasting, deformities, contractures, bowing of legs, hypertrophy of calf muscles.

❄ ***Walking:***

✓ Forward:1y
✓ Backward: 2y
✓ Side Walk: 3 y
✓ Tandem Forwards: 4y
✓ Tandem Backward: 5 y

❄ ***Standing:***

✓ Tip Toe: Standing: 2y Walking: 3 y Running 4y
✓ On One Leg: 1 second: 3y 5 seconds: 4 y 10 seconds: 5 y

❄ ***Running:*** Stiff Running: 2 Y Smooth Running: 3y

❄ ***Jumping:***

✓ *Jump In Place: 2y using both legs*
✓ *Jump Forwards: 3y*
✓ *Hop in Place: 4y using one leg*
✓ *Hop Forward: 5y*

❄ ***Ball:***

✓ *Kick: while stop: 2y while running: 4y*
✓ *Throw:*
- *Outstretched Hands: 2y*
- *Front of Head: 3y*
- *Behind his Head: 4y*

✓ *Catch:*
- *Outstretched Hands: 3y*
- *Front of Head: 4y*
- *Goalkeeper: 5y*

✓ *Bounce the ball: 5y*

❄ ***Stairs:***

- *Up & down with 2 feet (child manner): 2y*
- *Up with one foot (adult manner) and down with 2 feet: 3 y*
- *Up & down with 1 foot (adult manner): 4 y*

❄ ***Cycle:*** *Tricycle 3y Bicycle: 5y*

Exam cases:

- Downs $
- Rickets
- DDH
- Congenital Myopathy (Duchenne)
- TS
- Sturge Weber With Hemiplegia
- Sickle Cell Anaemia with Stroke
- Shaken Baby $
- Operated Brain Tumour.
- CP With Diplegia
- CP With GDD

N.B: In case of hemiplegia (discrepancy between Rt& Lt).

In case of diplegia (discrepancy between upper and lower limb).

DD:

- Prematurity
- Genetic (Down - Spina Bifida)
- Neuromuscular (Myopathy, DMD, CP, SMA)
- Hypothyroidism
- Mechanical Or Anatomical (DDH, Trauma)
- Sickle Cell Anaemia & Other Bleeding Disorders with Hemiplegia.

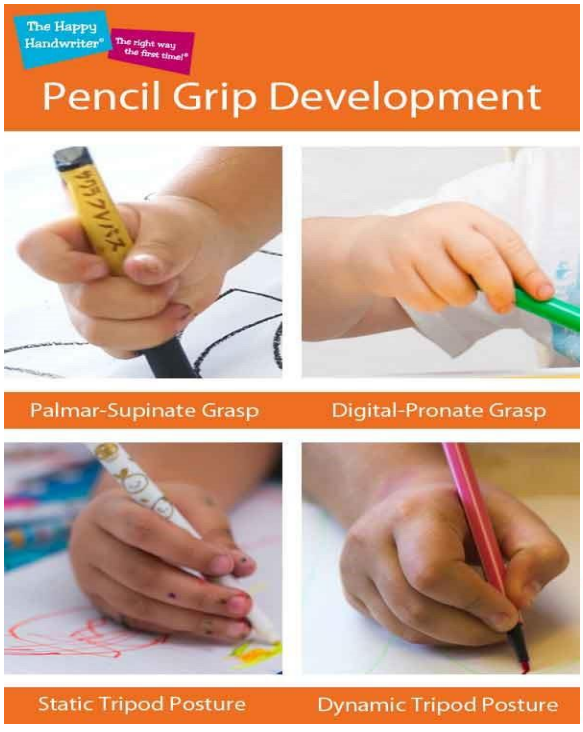
- **Fine Motor & Vision** ***4 C & 3B*** مهارات التحكم في اليد = نظر سليم + يد سليمة

Important to ask about if he is wearing glasses, inspection for any eye abnormalities like ptosis, squint, telangiectasia. Also, any fisting position of his hands.

❄ ***Cross matching:*** *I will give him the paper with one hand and Crayon with the other hand, how is he receiving it? does he give good eye alignment and good cross matching?*

- ***Ask about the hand grip of the child, hand preference and dominant hand.***
- ***Hand Preference before 1.5 year is pathological.***
- **Fist Grip: 1-2 Y Quadri Pod Grip: 2-3 Y Tripod Grip: 3-4 Y**

Infant Grasp Development
Palmar Grasp (4-6 months)
Radial Digital Grasp (8-9 months)
Inferior Pincer Grasp (9-10 months)
Pincer Grasp (10-12 months)



❄ ***Cubes:***

- *Tower: count divided by 3 (3 y= 9; 2y=6)*
- *Train: 3y*
- *Bridge: 3y*
- *Stairs: 6 cubes: 4y 10 cubes: 5y*

❄ ***Cryon:*** ***SLM*** ***CSTR***

- *Scribble:* to & fro: 1.5y circular: 2y
- Line: vertical: 2y horizontal: 2.5y
- Mommy parts: 3 parts: 3y 4 parts with trunk:4y with details:5y
- Circle:3y
- Square: 4y
- Tringle: 5y
- Rectangle:6y

❄ ***Cutting scissor:*** ***(hold in a safe way)***

- Open & close without cutting: 2y
- Snip the paper: 2.5y
- Cut forward: 3 - 3.5 y
- Cut the line on paper till the end or the paper into 2 halves: 4y
- Cut a shape: 5y

❄ ***Book:***

- More than one page at once: 1.5 y
- One page by one: 2y

❄ ***Beads:***

- Large beads: 3y
- Small beads: 4y

❄ ***Board:***

- 2 Simple Shapes: 2 y
- 3 Simple Shapes: 3 y
- 4 Simple Shapes: 4 y
- Complex Shapes: 4.5 y

Exam cases: Alone or part motor task (gross and fine)

Rett $, part of GDD in Down $, Hemiplegia (Different Causes)

– **In case of hemiplegia, there will be discrepancy between right and left side. You have to give age to each side**.

DD: vision problems, coordination (ataxia & chorea), autism, lack of practice or neglect, UL deformity, neurodegenerative disorder.

- **Speech & Hearing:** ***expressive & receptive***
- Observe for any ear deformities, any hearing aids, any tongue anomalies or facial deviation.
- **1st I will whisper in each ear with a low tone voice, can he hear me?**
- If not, I will speak with a **high tone voice**, now can he hear me?
- If you notice features of **autism**: you will need to **engage the mother** if not responding to his name and daddy name.

Hearing tests:

- **Neonatal screening:** Evoked Otoacoustic Emission, Auditory Brainstem Response.
- **6 - 24 m:** Distraction Test.
- **6 - 30 m:** Visual Reinforcement Audiometry.
- **20m – 5 y:** Play Audiometry.
- **> 3y:** Speech Perception Test.
- **4y:** Pure Tone Audiometry.
- **Any age:** Tympanometry.
- **Suitable Age For Cochlear Implant:** Best Age Before 2 y, Maximum Age Is 4 y.

N.B:

✓ **Expressive** (CV, Song, Story, Vocabulary, Sentence). تعبير الطفل عن نفسه

✓ **Receptive** (Object, Orders, Body Parts, Pronouns, Opposites) استقبال الطفل للكلمات وفهمها

✓ **Both Expressive & Receptive** (Colour & Count). كلاهما معاً

❄ ***CV*** ***NSAB***

- **N:** Name First Name 2y
- **S:** Sex (Are you a boy or a girl?): 3y Full Name, Age, Sex: 3y
- **A:** Address: 4y
- **B:** Birthdate: 5y

❄ ***SCOP***

◎ **S:**

- **Sentence:** a sentence of 2 words: 2y 3 words: 3y 4 words and more: 4y
- **Song:** 3y
- **Story:** 4y

◎ ***C:***

- **Count:** 1-5: 3y up to 10: 4y reverse manner: 5y
- **Colours:** 2 Colours: 3 y 3 colours :4y

◎ **O:**

- **Object Recognition:**
  - 3 objects with their functions: 3y
- **Order:**
  - Order of 1 step: 1.5 y (put the cup here)
  - Order of 2 steps: 2y (throw the ball then go get it)
  - Order of 3 steps: 3y
  - Order of 4 steps: 4 y
- **Opposites:**
  - hot & cold, tall & short: 1 opposite at 3y

◎ **P:**

- **Parts Of Body: أعضاء الجسم**
  - 3 parts: 1.5 y
  - 5 parts: 2y
- **Preposition: ظرف المكان**
  - above & below: 3y
- **Possessive Pronouns: ضمائر الملكية**
  - Simple Pronouns (Me, My, Mine): 2y
  - Your, Yours: 3y
  - Her, His: 4y
  - Their, Them: 5y

❄ **If you notice the child has autism, ask about pattern of speech (interrupted, unclear, echolalia, scripting).**

❄ **If the child is not talking with you, ask the mother: how much vocabulary is he using?**

- **1y:** 2-5 words other than mama & dada
- **18 months:** 20-50 words
- **2y:** 50-200 words

Exam cases: Meningitis received gentamycin, Autism, Baby in foster care, Rett.

N.B:

– **Autism & in case of hearing loss as in meningitis during NICU admission, it will be discrepancy between expressive & receptive language (give age for each and mention it in your presentation).**

DD: hearing problems, ear infection, autism, isolated speech delay due to neglect or lack of training, cleft lip & palate, psychological, part of GDD.

- **Social:** **FDPT** **الأم أكلت الطفل ولبسته ودخلته التويلت علشان ينزل يلعب**

F: Feeding

✓ Cup: 1-1.5 y
✓ Spoon: 1.5y
✓ Fork: 2.5y
✓ Knife alone: 3.5y
✓ Knife & Fork: 4

D: Dressing:

✓ Remove Shoes: 1.5y
✓ Remove Shirt: 2.5y
✓ Dress with help: 3y
✓ Dress without help: 4y
✓ Unbutton:4y
✓ Button: 5y

T: Toilet

✓ Indicate his needs: 1.5y
✓ Dry by day: 2.5 y
✓ Go to toilet alone + Wash his hands: 3y
✓ Dry by day & night + Brush his teeth: 4y

P: Play:

◎ **1.5 y:** **3S**

- **Solitary:** play alone قاعد لوحده مع نفسه
- **Symbolic:** I will give him the doll; can he comb her hair بيعمل زي اللي مامته بتعمله
- **Spectator:** look at the children, not imitate or participate in playing. مراقب لا يقلد ولا يشارك.

◎ **2.5- 3 y: PIP**

- **Pretending:** if I give him a cube, can he use it as a phone and start to talk يمسك المكعب ويتكلم فيه زي التليفون
- **Imaginary:** hold the phone and dial a number and start to talk to someone who is not here. يمسك التليفون ويضرب رقم ويكلم شخص غير موجود
- **Parallel:** sit and watch the kids playing, imitate them, but not sharing يشوف الاطفال ويقلدهم لوحدهم ولا يشاركهم

◎ **3.5 y:** **Sharing Objects**.

◎ **5 y: GFR (Group play, Fantasy play, Role player).**

Exam cases: Autism, ADHD, Rett, foetal alcohol $, part of GDD.
DD: Autism, ADHD, Neglect, Ineffective Parenting, Attachment Disorder, Metabolic, Part of GDD.

AUTISM
RED FLAGS
6 MONTHS
Few or no smiles. Limited or no eye contact.
9 MONTHS
Little back & forth interactions (sharing of facial expressions/sounds)
12 MONTHS
Little / no babbling, pointing, waving & reaching. No response to name.
16 MONTHS
Very few or no words.
24 MONTHS
Very few or no meaninful 2 word phrases.
ANY AGE
Loss of speech. Avoid eye contact. Preference for solitude. Difficulty identifying feelings. Echolalia. Restrictes interests. Repetitive behaviors. Unusual reactions to sensory stimuli.

The 6 Stages of Play
Pathways.org
Unoccupied Play
0–3 months
When baby is making movements with their arms, legs, hands, feet, etc. They are learning about and discovering how their body moves.
Solitary Play
0–2 years
When a child plays alone and are not interested in playing with others quite yet.
Spectator/ Onlooker Behavior
2 years
When a child watches and observes other children playing but will not play with them.
Parallel Play
2+ years
When a child plays alongside or near to others but does not play with them.
Associate Play
3–4 years
When a child starts to interact with others during play, but there is not much cooperation required.
For example, kids playing on the playground but doing different things.
Cooperative Play
4+ years
When a child plays with others and has interest in both the activity and other children involved in playing.

Presentation example: today I did … assessment for … he is average for his age, vitally stable, no unusual features is there, no attached device of clinical significance. His chronological age is … but, I gave him the age of … because (he cannot do ..... 2 things at his age & can do 3 things at the other age.

- **Causes Of Delay:**

▪ ***General Rule:*** causes of delay from your history taking, if you have syndrome, so the first cause is being a part of his syndrome.

▪ ***Common Causes:*** **PEEF**

➢ ***Physical:*** Central (CP), Peripheral (muscle, bone, joints), Sensory (vision & hearing), Syndromes.

➢ ***Environmental*** (Malnutrition)

➢ ***Emotional*** (Neglect)

➢ ***Familial*** (Family Dynamics, Financial Issues, Detachment Problems).

➢ ***Global developmental delay GDD:*** Genetics (Down $, Alagille, Fragile X). Foetal Alcohol $. Infection (TORCH, meningitis, encephalitis). Toxins. Metabolic (Tay Sachs, MCAAD). Hypothyroidism. Prematurity. Idiopathic.

➢ **Regression:** Lead poisoning (pipes-water source-old paints). Post infection. Post tumour. Post trauma. Metabolic disorder. Genetic (Rett). Degenerative (Wilson).

▪ ***Then according to each syndrome:***

Down $: Part of his condition, hypotonia, hypothyroidism, cardiac problems, being of low IQ, OSA with poor attention, autism association, visual & hearing problems, atlantoaxial sub-laxation, recurrent hospital admission, lack of intervention.

William $: Part of his syndrome, cardiac problems, hypothyroidism, coeliac, psychiatric association with autism, social impact and bullying.

Fragile X $: Part of his condition, low IQ, cardiac problems, hypermobility, behavioural problems ADHD, bullying, hearing problems.

C.P or diplegia: Part of his condition, speech problems, hearing loss, low IQ, recurrent chest infection, recurrent admissions, seizures, side effects of antiepileptics, feeding problems with failure to gain weight.

MPS: Part of his condition, mental retardation due to accumulation of glycosaminoglycans in the brain, OSA, corneal cloudiness, deafness, cardiomyopathy, short stature and bone deformities and contractures, bullying due to coarse facies.

Prader Willi $: Part of his disease, obesity, OSA & tiredness, MR, bullying, lack of intervention, behavioural abnormalities like autism.

Achondroplasia: Part of his condition, skeletal deformities, recurrent fractures, Rickets association, hypermobility, shunt complications, recurrent hospital admission, OSA with impaired concentration, cervical compression.

- **Investigate Unknown Case?**

First line:

Blood:

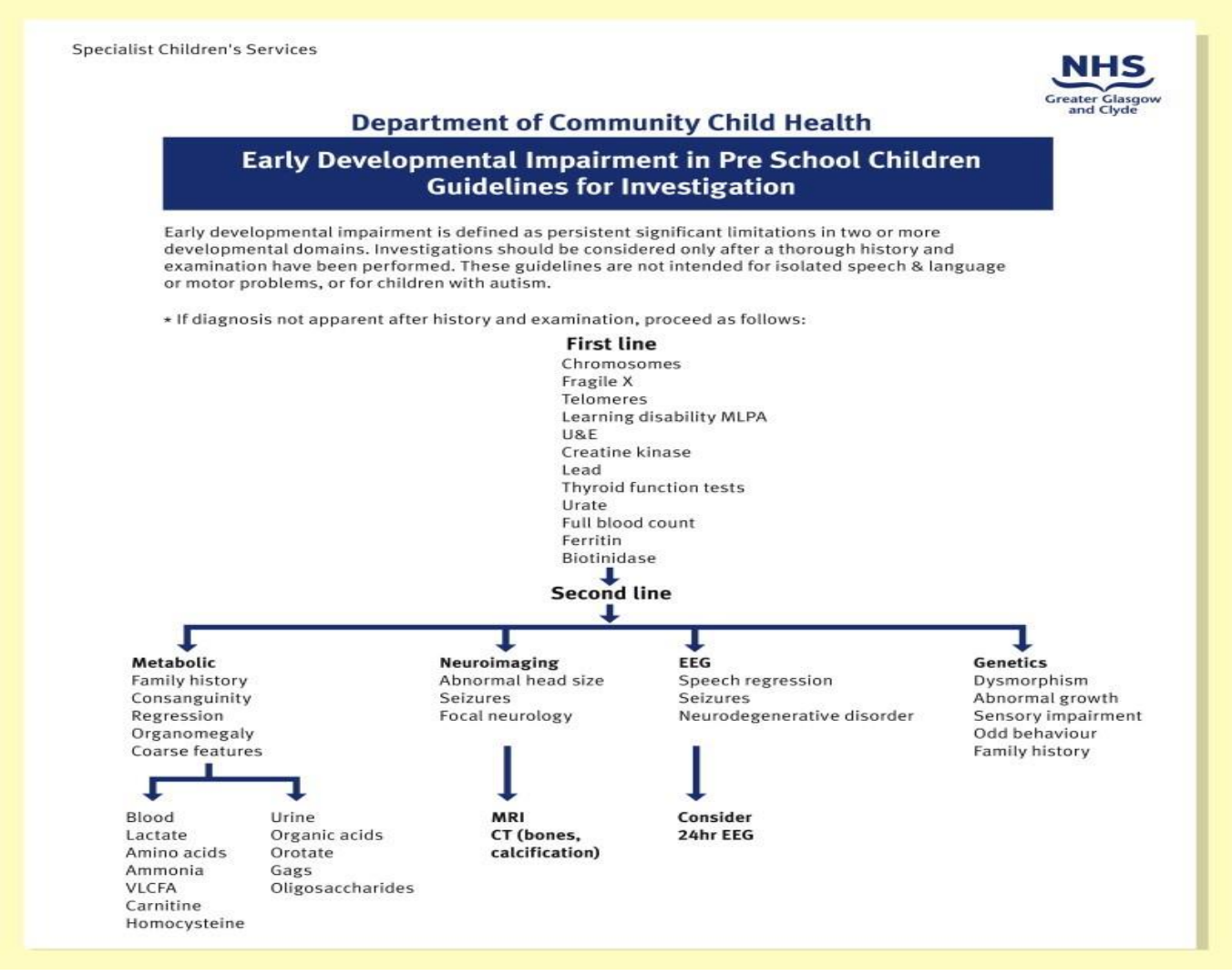
- Genetic testing "CGH microarray",
- TFT: hypothyroidism
- CK: DMD.
- U&E, Calcium: Di-George, Williams.
- Lead, Biotinidase: Lead toxicity.
- Acyl-carnitine, TORCH.

Urine:

→Glycosaminoglycan: MPS.

Second line:

- Metabolic: Ammonia, lactate, AAs, OAS, Homocysteine, VLCFA.
- Neuroimaging: MRI
- Neurophysiology: EEG.
- Genetics: Fragile-X.



• Multidisciplinary team (MDT):

– Paediatrics, Development, Vision, Hearing, Psychiatrist + Relevant team "Neurology, Cardiology "

❄ ***Paediatrician:***

- ***GP:*** the doctor who will take history, do Examination and run Investigations, Assessment, Referral, Counselling, Follow-up & re-evaluation.
- ***Developmental Paediatrician:*** paediatrician with special interest in development.
- ***Community paediatrician:*** a specialist in management of long-term health problems that affect his life quality, assess and coordinate between the team for development problems, treat medical & social and educational problems.

❄ ***Vision + Hearing Assessment***

- ***Ophthalmologist:*** **https://youtu.be/On42TuQ_eVE?feature=shared**

- medical professional who can diagnose and treat both medical and surgical problems of eye disease, describe medications, do surgical operations on the eye, prescribe contact lenses and conduct research.

- ***Orthoptist:*** specifically trained to evaluate how to eye functions and interpret test results. They diagnosis eye movement disorders, and work with the ophthalmologist in formulating and managing individual treatment plans. Can prescribe eye patches, exercise, glasses, but not surgery.
- ***Optometrist:*** diagnose and treat ocular disease. Prescribe, fit, and adjust eyeglasses, contact lenses, and other vision aids. Recommend appropriate patient follow-up and care options. Answer questions and provide advice to patients regarding vision and optical issues. Not doing surgery.
- ***Audiologist:*** **https://youtu.be/IEPjjLQpRYo?feature=shared**

– Audiologists are health care professionals who diagnose, manage, and treat hearing, balance, or ear problems. They work in the field of audiology, which is the science of hearing and balance. They determine the severity and type of hearing loss a patient has and develop a plan for treatment either medically or balance therapy or hearing aids.

- ***ENT:*** **https://youtu.be/VXjGBqpbra0?feature=shared**

– ENT specialists or ENT surgeons are specialists in diagnosing and treating disorders and diseases affecting the ear, nose, throat, head and neck. Throat – tonsillitis, throat, voice and swallowing disorders, salivary gland diseases, thyroid conditions and parathyroid disease. treat conditions that affect the senses such as hearing and balance disorders or smell and taste problems. You'll also treat patients with conditions that affect their voice, breathing and swallowing as well as those with head and neck tumours, either prescribe medical ttt or do surgical operations including biopsy.

❄ ***Psychiatrist:*** ***https://youtu.be/zhY-iODwlVQ?feature=shared***

– Assesses, diagnoses and treats mental, emotional and behavioural disorders like ADHD, ASD, Tic disorders, Disruptive Behaviour, Depression, Psychosis, Anorexia. Can order medications and laboratory tests.

❄ ***Psychologist:*** ***https://youtu.be/UmsswRdNHOo?feature=shared***

- **Educational:** one of EHCP teams, do psychological counselling in the education environment, put diagnostic and educational assessment for teachers, family, parents and academic authorities.
- **Talking therapist:** manage emotional problems of the child and the family. Can use techniques for both psychotherapy and Behaviour modifications.
- **Cognitive Behaviour therapist:** Talk therapy, Triad of: Cognition, Behaviour & Emotion. It helps them think differently of themselves. Find new strategies to deal with stress. Remove -ve thoughts & help them convert it to +ve ones, also do habits reversal therapy (Tourette).

❄ ***Rehabilitation Team:***

- ***Physiotherapist:*** ***https://youtu.be/IFepR-VPwyo?feature=shared***

- Help with movements & exercises. Muscle stretching. It improves joint range + Decrease contractures. Prevent deformities. Improves gross motor skills: Sitting, crawling. Helps with mobility and relief pain. Rehabilitation of children after injury. Involved in chest physiotherapy and teach families how to do it at home. Teach family how to do home exercises + CPT + how to handle the child to decrease impact of disease on family.

- ***Orthotist:*** **https://youtu.be/luM4MnCWU2U?feature=shared , https://youtu.be/wKlnK7_CwOs?feature=shared**

- healthcare professional who makes and fits braces and splints (orthoses) for people who need added support for body parts that have been weakened by injury, disease, or disorders of the nerves, muscles, or bones. These orthoses help to protect the joints, improve the posture, and facilitate positional correction. All of this aims to improve the basic daily activities and mobility and decrease the burden on the family.

- ***Occupational therapist:*** ***https://youtu.be/zTP1J8cIkXc?feature=shared***

- Paediatric occupational therapy is very beneficial for children with autism spectrum disorder (ASD), Down syndrome, cerebral palsy, and developmental delays of varying degrees in all domains of development. Occupational therapy can also help kids who are recovering from a brain injury or stroke
- Help make modifications at home, school and sports.
- Help to improve daily activity: feeding, toileting, dressing, handwriting.
- Design some Manoeuvres, Devices, supporting aids & do environment modification.

Occupational therapy helps children work towards independence in many different ways.
Life skills
An OT provides training, support, & tools related to life skills such as toileting, dressing, feeding, play, & more
Physical capabilities
This can include balance, coordination, strength, fine & gross motor skills, endurance, & more
Executive functioning
This includes following instructions, problem-solving, frustration tolerance, focus, & other cognitive skills
Sensory
An OT provides sensory support related to sensory regulation, coping skills, developing a sensory diet, & other tools

- ***SALT:*** ***https://youtu.be/xiKYD9TSDhk?feature=shared***

- Supportive care with difficulties in communication, eating, drinking, and swallowing.
- Speech: Audiological assessment to detect receptive or expressive speech.
- Help child acquire speech -> articulation and fluency, Sign language if needed.
- Family education encourages them to speak in-front and improve interaction. Improve interaction, speech & grammar.

✓ **Indications of SALT?**

- Difficulties in learning, social interaction, producing sounds, swallowing.
- Language delay.
- Oral cavity disorders: Cleft palate.
- Neurological problems.

✓ **Plan of SALT?**

- Educational tools: Board, Shapes.
- Training exercises: Blowing, Tongue protruding.
- Alternative means of communication: Sign language.
- Family educational programs.

- ***EHCP: "Educational Health Care Plan"***

- Program for children with SEN± D "Special educational needs ± disability".
- Integration for: **Health care services, SENCO, Social service**.
- **Helps child to joint appropriate school:**
- Detects children with special needs.
- Doing assessment for him: IQ test.
- Starting by putting a plan.
- Refer to assigned specialist to improve coordination and education.
- Guide the family of type and name of school that fits him.

✓ ***SENCO: "Special Educational Need Coordinator"***

- Screen and analyse disability and detect child with need.
- Refer to specialists to improve coordination and educational achievements.

✓ ***Educational psychologist:***

- Psychological counselling in educational community. Diagnostic and educational assessment: teacher, parents, academic authorities.

✓ ***Social Worker:***

- Emotional support for parents + listening to their concerns.
- Provide support groups and family counselling.
- Provide financial support and allowance.
- Child and family register for special need + safeguard when needed.

✓ ***Orchard Nurse: "Home expert Nurse visitor"***

- Visit home to assess child's condition.
- Educate patients and family about management.

✓ ***Portage worker:***

- Home visiting services for <5 yrs. children who need special education. Aiming to develop playing, communication, relationships, learning.
- Works either in family home, family centre or schools.

✓ ***Play-therapy:***

- For 3 y children. Use playing as a communication tool to help them to deal with stress & trauma.

✓ ***School role:***

- Teacher: Extra time + Suitable language.
- Nurse: Early identification + Proper management.
- School psychologist: Talking therapy.

Psychiatric Disorders:

AUTISM

[CAST] Childhood autism spectrum test.

<6: normal 6-16: ASD >16: autism

Verbal:

- Delayed speech
- Repeat last words: Echolalia
- Repeat last sentence: Scripting
- No active conversation

Non-verbal:

- No eye contact.
- No facial expressions.
- No pointing.
- No indicate need.

Social:

- Solitary: Socially alone
- Tantrums
- No emotional response
- No social response

Repetitive Behaviour:

- Rigid routine
- Stemming: Abnormal movement
- Obsessed with one toy
- Obsessed with a part of a toy

Assessment:

- What is the child doing now?
- Is he playing with any toy?
- Does he obsess with one part of his toy?
- When I entered did … notice me?
- Could he keep eye contact with me? **NO**
- Inspect mouth & ear for deformity and if wearing hearing aid
- Whisper in each ear separately ...could he hear me?
- I will say hello to him, my name is.... What is your name? Can he tell me? he shows any fascial expression or speak with me? **NO**
- My Dady name is..., what is your Dady name? **Not answering**

He may be shy then I will try to engage the mother (say her name) as he may respond better with her. could he? **NO** SO, ask about autistic features

- What about his speech pattern is their echolalia or scripting?
- If I hurt my hand on the table did, he shows any emotional response?
- If I point to the light, will he follow me?

Complete your speech & social assessment as usual but, start from a younger age than chronological age of the child and be aware that he may have a great discrepancy between expressive & receptive speech.

❄ ***Management Of Autism***

- Assess other developmental delay.
- Refer to CDC. (child developmental centre)
- Vitals, take measurements and plot on appropriate centiles.
- Formal vision & hearing assessment ± genetics ± others.

✓ **MDT**

- Consultant paediatrician.
- Developmental paediatrician.

✓ **Autistic team:**

◎ **Cognitive Behavioural therapy.**

- Early (2-4 y), intensive Behaviour intervention (course 40 h /w), 1:1 Behaviour training, intervention.

◎ **Parent mediated interventional therapy**

- Computerized educational program for parents.
- Close observation & follow up of the child.
- Computerized questionnaire.

◎ **Speech team: ENT, Audiology, SALT**

▪ **Role of SALT in autistic child:**

- Teach the parents to talk at home in an easy way and understandable words and give clear orders to the child.
- Help in articulation of the words
- Improve communication through both verbal and non-verbal communication.
- Help to develop conservational skills.
- All of this will help the child to enjoy communication, playing and interaction with his peers.

▪ **EHCP (educational healthcare plan)**

▪ ***Occupational therapist*** (sensory processing disorder, comorbidity).

▪ ***Psychiatrist*** (tantrum, self-harm, aggressive Behaviour, sleep disturbance).

▪ ***Another specialist*** accordingly.

▪ **Dietitian:** nutritional support.

Drug therapy in Autism: if associated with co-morbidities.

Investigations: nothing specific, but through:

· ***Questionnaire:*** computerized questionnaire and history taking.

· ***Observation:*** of child communication and play.

· ***Reports:*** from educational health specialist to assess the severity according to the child dependence.

· ***Investigations*** for associated co morbidities.

✓ ***Syndromes associated with autism:*** Down, Prader Willi, Williams, Sotos, Phenylketonuria, Angelman, Rett.

ADHD

➢ ***Triad:*** Hyperactive + Impulsive + Attention deficit. ***(for 6 months – in 2 occasions)***

❄ ***Hyperactivity:***

- On the go as if he is driven by a motor?
- Difficulty staying in his seat at meal times?
- Always fidgeting (feeling bored).
- Excessive physical movements, driven by motor.
- Unable to stay still even in the appointment place.
- Acting without thinking.
- Little or no sense of danger.

❄ ***Impulsivity:***

- Fail to wait his turn?
- Blurt out answers before questions are completed?
- Interrupt conversations & answer questions before completing it.

❄ ***Attention deficit:***

- Difficulty concentrating on mental tasks?
- Make careless mistakes?
- Easly distracted &short attention span
- Forget &lose his things
- Always change activity or task
- Difficulty in organizing task
- Unable to listen to instructions &finish his homework
- Unable to strict to tasks that need mental effort.

Associated:

- Difficulty organizing a sequence of activities?

Diagnosis of ADHD **No special test to diagnose ADHD**

- **Through history & examination via series of interviews by**

- Child psychiatrist, Paediatrician, Learning disability specialist, social worker, Occupational therapist with expertise in ADHD

- **Reports & questionnaire to both parents and school.**
- **QB test may help in diagnosis of ADHD.**

- Its computer-based test measures the core $ of ADHD.
- Reliable.
- The child is asked to respond quickly and accurately to geometric shapes.
- A camera records the child's movements during the test.
- The results analysed & compared with 2 children from the same age, sex with the child, one of them normal, the other one has ADHD.

D.D OF ADHD

- ***Psychological factors***

- Expose to sexual or physical abuse
- Expose to inappropriate parent practice
- Expose to inappropriate classroom setting
- Expose to acculturation اكتساب ثقافات جديده واختلاف ثقافات

- ***Diagnosis associated with ADHD***

- Foetal alcohol $, fragile x $, DiGeorge $, Tourette $, OCD, detachments disorders.

- ***Neurological and metabolic disorders***

- Thyroid disease, lead poisoning.
- Neurodegenerative disorders(leukodystrophy).
- S.E of legal or illegal drugs vision& hearing problems.
- Head trauma & CNS infections.

Management Plan for ADHD

- ***Mild &Moderate Cases***

- Watchful waiting for 10 w, if not improving or impact on the family, so, Parent training educational program
- CBT (cognitive Behavioural therapy)
- Social skill training.
- Close involvement of CAMHS & school is mandatory.

- **Severe Cases**

- Drug therapy (brain stimulant that stimulates good Behaviour & self-control).
- Parent programs.
- CBT & psychotherapy for the child.

DRUGS

- ***Methylphenidate:*** Decrease appetite& wt. loss, Tachycardia & HTN (C.I in cardiac patients), GIT problems, Headache & mood changes, Tics.

- **Assessment after 4-6 w. if the child is responding so, continue and follow up every 6 m. if not responding or co morbidity like tics so, other drugs can be used.**

- **Atomoxetine**

- It has the same side effect as methylphenidate but, no tics or mood changes.

- ***Dexamphetamine***

- Side effects: nausea, vomiting, GI upset, decrease appetite
- Agitation, aggressiveness, dizziness, mood swings and headache

- **Guanfacine**

- Side effect: dry mouth, headache, abdominal pain and fatigue

❄ **Non-Pharmacological Therapy**

- **Diet**

- Healthy balanced diet.
- If symptoms worsen with some foods, do diary of what child eat or drink and its effect on his Behaviour & follow with dietician.
- Supplements: omega 3 &6 (some studies).

- **Parent Advice**

- Be sure that you are aware of ADHD & the difference between it and other conditions.
- Be aware of SE of drugs and observe him
- Get Involved in support group
- Laise with the school.

- ***Conditions associated with ADHD:***

- Foetal alcohol syndrome, Tourette, Lead poisoning, Medications: (nicotine, theophylline). Adrenoleukodystrophy, Psychological.

- **Conditions associated with Autism & ADHD:**

- Post trauma, Post infection, Post tumour, Thyroid dysfunction, Fragile x, NF1, TS.

- ***WHAT IS THE IMPACT OF THE DISEADE***

- **General & psychological on the child, family and other sibling**
- **Child:** its effect on learning, development, gaining skills, social, sleep, movement, school attendance & activity, psychological problem and bullying.
- **Family:** social (recurrent admission, no time for occasions), financial and psychological.
- **Other siblings:** being jealous because of more interest in that child.